# Recombinant Human GDF-5/BMP-14

Catalog Number: 8340-G5

## DESCRIPTION

| | |
|---|---|
| **Source** | *E. coli*-derived<br>Ala382-Arg501<br>Accession # P43026 |
| **N-terminal Sequence Analysis** | Ala382 and Pro383 |
| **Structure / Form** | Disulfide-linked homodimer |
| **Predicted Molecular Mass** | 14 kDa |

## SPECIFICATIONS

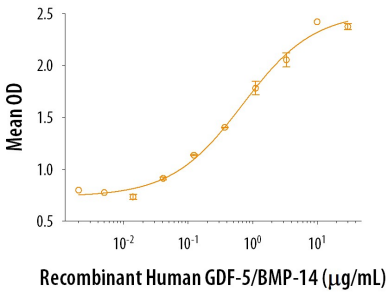
| | |
|---|---|
| **SDS-PAGE** | 14 kDa, reducing conditions |
| **Activity** | Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. Nakamura, K. *et al.* (1999) Exp. Cell Res. **250**:351.<br>The $ED_{50}$ for this effect is typically 0.2-1.2 µg/mL. |
| **Endotoxin Level** | <0.10 EU per 1 µg of the protein by the LAL method. |
| **Purity** | >90%, by SDS-PAGE with silver staining. |
| **Formulation** | Lyophilized from a 0.2 µm filtered solution in HCl. See Certificate of Analysis for details. |

## PREPARATION AND STORAGE

| | |
|---|---|
| **Reconstitution** | Reconstitute at 250 µg/mL in 4 mM HCl. |
| **Shipping** | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. |
| **Stability & Storage** | **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**<br>● 12 months from date of receipt, -20 to -70 °C as supplied.<br>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.<br>● 3 months, -20 to -70 °C under sterile conditions after reconstitution. |

## DATA

**Bioactivity**




Recombinant Human GDF-5 (Catalog # 8340-G5) induces alkaline phosphatase production by ATDC5 mouse chondrogenic cells. The $ED_{50}$ for this effect is typically 0.2-1.2 µg/mL.



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## BACKGROUND

Growth Differentiation Factor-5 (GDF-5; also called BMP-14 and CDMP-1) is a member of the BMP family of TGF-β superfamily proteins (1, 2). Human GDF-5, -6, and -7 are a defined subgroup of the BMP family (3). GDF-5 is synthesized as a homodimeric precursor protein consisting of a 354 amino acid (aa) N-terminal pro-region and a 120 aa C-terminal mature peptide. Mature human GDF-5 shares 99% aa sequence identity with both mature mouse and rat GDF-5. GDF-5 signaling is mediated by formation of a heterodimeric complex consisting of a type 1 (BMPR-IB) and a type II (BMPR-II or Activin RII) serine/threonine kinase receptor which results in the phosphorylation and activation of cytosolic Smad proteins (Smad1, 5, and 8) (4, 5). Similar to other BMP family proteins, GDF-5 signaling is antagonized by Noggin (6). GDF-5 is involved in multiple developmental processes including limb generation, cartilage development, joint formation, bone morphogenesis, cell survival, and neuritogenesis (7-11). Exogenous GDF-5 has been reported to promote chondrogenesis, osteogenesis, and angiogenesis in mesenchymal stem cells *in vivo* and *in vitro* (12-14). Inhibition of GDF-5 expression or alteration of its signaling can facilitate the development of osteoarthritis (15-18).

**References:**

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